

Tennessee Pollution Prevention Partnership Success Story



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Cougars Care about Clean Air

The Member

Centennial High School's Environmental Science classes, under the direction of Jeff Taylor, perform hands-on projects inside and outside the school. Through these projects, all three classes learn about the environment and the impacts people can have on the environment. The classes are broken down into 12 student-lead teams. Each team has specific environmental goals, such as recycling, litter pick-up, erosion control, research, public relations, the greenhouse, campus beautification, energy conservation, and the pond. These teams identify and work toward their goals all year to create a better environment on campus and in the local community.

The Story

For the final Green School project, the students had to tackle Clean Air. They invited Gail Bost, the county's EPA-certified Indoor Air Quality Tools for Schools advocate, to come to their class and talk about indoor air quality. They learned how water infiltration into a building, new furniture/carpet, copiers, air fresheners and perfumes/colognes all affect the indoor air. They learned that people with certain allergies or asthma could be triggered by small amounts of allergen. They also learned of the necessity to exhaust indoor air and bring in outside air to keep a room's carbon dioxide levels low.

The students then began to study about things that cause air quality issues outside. One answer was right in front of their faces – cars. Centennial has approximately 1750 students and staff. There are 686 parking spaces that are permitted on a first-come-first-serve basis each semester, 560 for students and 126 for teachers. Only Juniors and Seniors are allowed to drive to school; some underclassmen ride school buses; and some get rides from parents. There are LOTS of cars everyday, arriving and leaving the Centennial campus. Students researched the pollution from car emissions and found that cars add to ozone formation, acid rain, and smog – all are damaging to air quality, human health, and our environment. They decided to have a 'Car Pool to School' day for Earth Day. They began collecting gas receipts for a month to determine the average gas usage per day of a high school driver. This information would help determine the amount of gas saved by carpooling, as well as the emissions prevented from driving fewer cars. Carbon Dioxide (a greenhouse gas), Nitrogen Oxides (ozone and acid-rain-forming compounds), Carbon Monoxide (a poisonous gas), and PM-10 (particulates) are the primary emissions of concern.

Students wanted to help combat these air emissions. They knew that trees absorb Carbon Dioxide during photosynthesis. They contacted the Tennessee Department of Agriculture, who donated 500 Yellowwood saplings, a native tree species. Not needing 500 trees on campus, the students decided to give the trees away at the Williamson County Bloom and Garden Show. They worked in conjunction with Keep Williamson Beautiful and utilized their booth as a platform. The students put up a sign reading, "Did you know that 1 tree removes 3kg of Carbon Dioxide from the air every year? It takes a lot of trees to combat air pollution. So, please Take a Tree and instructions home to plant and help the Centennial High School Environmental Science Class Clean Air Project."

The Success

After analyzing gas receipts for a month, students found that, on average, each driver was using about 0.6 gallons of gas each day. Students conducted a "Car Pool to School" event on Earth Day, April 22, 2004. It was advertised with banners around the school and announcements on the closed circuit TV and the PA. Students solicited incentives from local businesses for participants – coupons for free cookies, meals, and tickets to a Sounds baseball game. There were 339 students and 21 teachers that participated, riding in 126 student cars and 10 teacher cars.

The 500 trees were given away in 2 hours to local residents for planting in the community. They planted a new magnolia tree by the pond at the school, adding to the countless trees and bushes the Environmental Science classes have planted on their campus since the school opened in 1996.

The Pollution Prevented

If all 360 the car pool participants had driven their own cars, there would have been 216 gallons of gas burned on Earth Day, based on the average amount of gas (0.6 gals) used by student drivers. Thus, 134.4 gallons of gas, a non-renewable resource was saved on the car pool day. Because different models of cars burn gas in different ways, producing varied amounts of emissions, we could not calculate emissions prevented. But we know we decreased the amounts of CO₂, CO, NO_x, and particulates in the air on the roads of Franklin and around the school. We plan to promote more car pool days next year. It also saves money on gas! At \$1.75/gallon, there was approximately \$235.20 saved on Earth Day.

Once the 500 trees mature, they have the potential to remove 1500 kg of Carbon Dioxide from the atmosphere, helping to combat global warming.

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